

(NASA-CR-192431) DEBRIS INDUCED
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**TECHNICAL REPORT
AUBURN UNIVERSITY
AUBURN UNIVERSITY, ALABAMA 36849**

CONTRACTORS' NAME: AUBURN UNIVERSITY

CONTRACTORS PERFORMANCE ADDRESS: SPACE POWER INSTITUTE

231 LEACH CENTER, AUBURN UNIVERSITY, AL 36849

CONTRACT / GRANT NUMBER: NAG8-39131 DELIVERY ORDER NO. 2

AWARD AMOUNT: 1 PERIOD OF PERFORMANCE: 3 MONTHS - EFFECTIVE

AWARD DATE OF DELIVERY ORDER: SEPTEMBER 13, 1991 - DECEMBER 12, 1991

CONTRACTING OFFICER: ELAINE HAMNER

COTR: Principal: L. J. Smith - Alternate: Jason Vaughn

REPORTING PERIOD: FINAL REPORT

DATE OF SUBMISSION: 8/12/92 (REPORT NUMBER 4)

PROGRAM TITLE: "DEBRIS INDUCED ARCING"

REMARKS: **FINAL TECHNICAL REPORT**

THE PURPOSE OF THESE EXPERIMENTS WERE TO DETERMINE THE THRESHOLD FOR DEBRIS INDUCED ARCHING IN A SPACE PLASMA FOR A BODY WITH A NEGATIVE CHARGE AND CAPACITANCE SIMILAR TO THAT CALCULATED FOR SPACE STATIONS. NUMEROUS EXPERIMENTS TO ESTABLISH PLASMA PARAMETERS AND EXPERIMENTAL CONFIGURATION WERE CONDUCTED. WHEN AU AND MARSHALL WERE SATISFIED WITH THE EXPERIMENTAL PROTOCOL, THE FINAL EXPERIMENTS WERE CONDUCTED AT MARSHALLS DIRECTIONS AND THE RESULTS REPORTED BY TECHNICAL BRIEF AND LAB - NOTEBOOK TO THE NASA MARSHALL STAFF SCIENTISTS.

THE RESULTS ESTABLISHED A BREAKDOWN THRESHOLD ON THE ORDER OF -75V FOR OUR CONFIGURATION.

PRINCIPAL INVESTIGATOR: **DR. M. FRANK ROSE**
SPACE POWER INSTITUTE